

REMARKS

Applicant submits that the present amendment is intended to be fully responsive to the Office Action having a mailing date of July 8, 2003. In response to the Office Action, Applicant has amended the specification and claims for the purpose of putting the application in condition for allowance. Applicant submits that no new matter has been added by this amendment and that support for the specification and claims as amended may be found throughout the application as originally filed.

The present invention provides a method of tracing the motion of a three-dimensional object based on the stereo image of the object obtained in a time series. The method comprises the steps of selecting tracing points corresponding to the silhouette of the object concerned in the stereo image of the object; sampling from the above-mentioned stereo image the corresponding points on the silhouette of the object corresponding to the respective tracing points; measuring the three-dimensional coordinates of the sample corresponding points; and detecting the position/posture of the object from the three-dimensional coordinates of these respective tracing points and respective corresponding points, wherein the three-dimensional motion of the aforesaid object is traced by continuously repeating each process from the selecting step through the detecting one toward each frame of the stereo image obtained and the time series. (See claim 1)

35 U.S.C. §102

Claims 1-8 are rejected under 35 U.S.C. §102(b) as being anticipated by Sumi et al., U.S. Patent No. 5,845,006 issued to Applicant in December 1998.

It is appreciated that anticipation requires that a cited reference disclose each and every element of the claimed invention. Applicant submits that the '006 reference does not

disclose a method whereby the three-dimensional motion of an arbitrarily curved object can be traced over a time series as according to the present invention.

The invention of Sumi et al. '006 reference extracts edges of the object from stereoscopic images obtained in a time series (column 1, lines 53-55; column 2, line 67 – column 3, line 1). In other words, an arbitrarily-curved object cannot be recognized as an object constituted by smooth curved surfaces, but only recognized as a polyhedron constituted by a plurality of edges. Consequently, Sumi et al. '006 reference can trace movements of the polyhedron such as an object constituted by building blocks based on extracted edges, but cannot trace movements of the arbitrarily curved object such as a banana. Sumi et al. '006 reference recognizes a banana as an elongated oval object when laterally observed and suspended on one end, while the banana is recognized as a circular object when observed from above. Thus, since Sumi et al. '006 reference recognizes the banana as a different object depending on an observing point and cannot trace movements of the banana in this manner. On the other hand, since the present invention can recognize an arbitrarily-curved object substantially as it is by utilizing a net configuration model, it can trace movements of the banana.

The Sumi et al. '006 reference can trace movements of a cardboard box or a box-shaped object on a road ahead of a car and recognize it as an impediment on the road, since such object can be roughly substituted as a polyhedron. However, Sumi et al. cannot recognize an object constituted by complicated curved surfaces such as a passenger car, a motorcycle or a pedestrian, so that such object cannot be detected as an impediment. On the other hand, since the present invention can recognize and trace movements of a passenger car, a motorcycle, or a pedestrian constituted by complicated curved surfaces, it can be utilized advantageously in versatile ways.

As the '006 reference discloses a method for tracing the motion of a three-dimensional object having exact edges rather than an object having an arbitrarily curved and smooth surface, Applicant submits that this reference should not be used to form the basis of an anticipation rejection. Accordingly, Applicant respectfully requests that this be withdrawn as a grounds for rejection.

From the foregoing amendments and remarks made in response to the above-identified Office Action, Applicant believes that the application as amended is now in condition for allowance. As such, Applicant respectfully requests reconsideration of the application as amended and that such action toward allowance be taken.

Respectfully submitted,



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